

**NAME OF THE WORK: PACKAGE NO.03  
(CONSISTS OF 5 WORKS)**

**Third and Final Bill**

**Quality Control Reports**

**BOOK NO – 03**



AN ISO 9001 : 2008 COMPANY & ACCREDITED LABORATORY AS PER ISO/IEC 17025:2017

# 4, 7TH MAIN MALLESWARAM, BANGALORE -3

### QC ABSTRACT

NAME OF WORK: Package No-03 (Consists of 5 works)

| SL NO            | Item Of Work                      | Name of Test                            | Frequency of Test/Quantity | Executed Quantity | Number of Tests Required | Number of Tests Conducted |
|------------------|-----------------------------------|-----------------------------------------|----------------------------|-------------------|--------------------------|---------------------------|
| <b>Materials</b> |                                   |                                         |                            |                   |                          |                           |
| 1                | Cement                            | Fineness by dry sieving                 | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Fineness by Air permeability method     | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Density                                 | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Standard Consistency                    | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Initial Setting time                    | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Final Setting time                      | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Soundness (Le Chatelier's Method)       | One Test                   |                   | 1                        | 1                         |
| 2                | Coarse aggregate(40 mm down size) | Compressive Strength                    | One Test                   |                   | 1                        | 1                         |
|                  |                                   | SIEVE ANALYSIS                          | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Flakiness Index                         | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Elongation Index                        | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Specific Gravity                        | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Bulk Density(Loose)                     | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Bulk Density(Compacted)                 | One Test                   |                   | 1                        | 1                         |
| 3                | Coarse aggregate(20 mm down size) | Water Absorption                        | One Test                   |                   | 1                        | 1                         |
|                  |                                   | SIEVE ANALYSIS                          | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Flakiness Index                         | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Elongation Index                        | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Specific Gravity                        | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Bulk Density(Loose)                     | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Bulk Density(Compacted)                 | One Test                   |                   | 1                        | 1                         |
| 4                | Fine aggregate                    | Water Absorption                        | One Test                   |                   | 1                        | 1                         |
|                  |                                   | SIEVE ANALYSIS                          | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Specific Gravity                        | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Material finer than 75 micron           | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Bend test                               | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Tensile Test                            | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Yield Test                              | One Test                   |                   | 1                        | 1                         |
| 5                | Steel                             | ReBend test                             | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Core Compressive Strength               | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Corrected Cylinder Compressive Strength | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Equivalent Cube Compressive Strength    | One Test                   |                   | 1                        | 1                         |
| 6                | Precast (100mm)                   | Core Compressive Strength               | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Corrected Cylinder Compressive Strength | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Equivalent Cube Compressive Strength    | One Test                   |                   | 1                        | 1                         |
| 7                | Precast (230mm)                   | Core Compressive Strength               | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Corrected Cylinder Compressive Strength | One Test                   |                   | 1                        | 1                         |
|                  |                                   | Equivalent Cube Compressive Strength    | One Test                   |                   | 1                        | 1                         |

  
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WATER TESTING | GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES



|    |                               |                                        |          |  |    |    |
|----|-------------------------------|----------------------------------------|----------|--|----|----|
| 8  | RCC(M20)                      | Compressive Strength(7days and 28days) | 8 Sets   |  | 16 | 16 |
| 9  | Cement Concrete Pavemet (M30) | Compressive Strength(7days and 28days) | 11 Sets  |  | 22 | 22 |
| 10 | WMM                           | Sieve Analysis                         | One Test |  | 1  | 1  |
|    |                               | Impact Value                           | One Test |  | 1  | 1  |
|    |                               | Flakiness Index                        | One Test |  | 1  | 1  |
|    |                               | Elongation Index                       | One Test |  | 1  | 1  |
| 11 | DBM                           | SIEVE ANALYSIS                         | One Test |  | 1  | 1  |
|    |                               | STRIPPING VALUE                        | One Test |  | 1  | 1  |
|    |                               | Flakiness Index                        | One Test |  | 1  | 1  |
|    |                               | Elongation Index                       | One Test |  | 1  | 1  |
|    |                               | IMPACT VALUE                           | One Test |  | 1  | 1  |
|    |                               | Specific gravity                       | One Test |  | 1  | 1  |
|    |                               | Water Absorption                       | One Test |  | 1  | 1  |
|    |                               | Marshal Stability                      | One Test |  | 1  | 1  |
|    |                               | Marshal flow                           | One Test |  | 1  | 1  |
|    |                               | Percent air Voids                      | One Test |  | 1  | 1  |
|    |                               | Percent Voids in mineral Aggregate     | One Test |  | 1  | 1  |
|    |                               | Percent Voids filled with Bitumen      | One Test |  | 1  | 1  |
|    |                               | Density                                | One Test |  | 1  | 1  |
|    |                               | Gradation                              | One Test |  | 1  | 1  |
| 12 | BC                            | SIEVE ANALYSIS                         | One Test |  | 1  | 1  |
|    |                               | STRIPPING VALUE                        | One Test |  | 1  | 1  |
|    |                               | Flakiness Index                        | One Test |  | 1  | 1  |
|    |                               | Elongation Index                       | One Test |  | 1  | 1  |
|    |                               | IMPACT VALUE                           | One Test |  | 1  | 1  |
|    |                               | Specific gravity                       | One Test |  | 1  | 1  |
|    |                               | Water Absorption                       | One Test |  | 1  | 1  |
|    |                               | Marshal Stability                      | One Test |  | 1  | 1  |
|    |                               | Marshal flow                           | One Test |  | 1  | 1  |
|    |                               | Percent air Voids                      | One Test |  | 1  | 1  |
|    |                               | Percent Voids in mineral               | One Test |  | 1  | 1  |
|    |                               | Percent Voids filled with Bitumen      | One Test |  | 1  | 1  |
|    |                               | Density                                | One Test |  | 1  | 1  |
|    |                               | Gradation                              | One Test |  | 1  | 1  |
| 13 | BITUMEN                       | Ductility                              | One Test |  | 1  | 1  |
|    |                               | Softening Point                        | One Test |  | 1  | 1  |
|    |                               | Penetration                            | One Test |  | 1  | 1  |
|    |                               | Flash Point                            | One Test |  | 1  | 1  |
|    |                               | Fire Point                             | One Test |  | 1  | 1  |
|    |                               |                                        |          |  |    |    |
| 14 | TACK COAT                     | Rate of spread                         | One Test |  | 1  | 1  |

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Format No: CP/TF/01

TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID : CP-2023-01-04-01 Date: 06-01-23  
Project Name : Package No-03 (Consists of 5 works)  
Agency : M/s Karthik Enterprises, No.123, Aishwarya, 3rd Cross, Ramanna Garden, Vidyanarayapura, Bengaluru-560097  
Customer's Reference : BBMP/EE/BTP/WO/78/2022-23  
Date of Receipt : 04-01-23  
Sample Type : JSW 53grade  
Reference to BIS codes : IS 269:2015 Ordinary Portland cement Specification ,  
IS 4031 (Part 4,5):1988  
IS 4031 Part 1 (RA 2021) DETERMINATION OF FINENESS BY DRY SIEVING, Clause 4.4  
IS 4031 Part 2, (RA 2018) Determination of Fineness by Blaine Air Permeability  
IS 4031 Part 3, (RA 2019) Determination of Soundness, Clause 5, Clause 6  
IS 4031 Part 4, (RA 2019) Determination of Consistency of Standard Cement Paste, Clause 5  
IS 4031 Part 5, (RA 2019) Determination of Initial & Final Setting Time, Clause 5  
IS 4031 Part 11, (RA 2019) DETERMINATION OF DENSITY , Clause 6

Date of test : 04-01-23  
Environmental Conditions during test : Temperature: 26°C  
Humidity: 72%

| Sl.No. | Physical properties                                       | Results     | Requirement as per IS 269:2015 |
|--------|-----------------------------------------------------------|-------------|--------------------------------|
| 1      | Fineness by dry sieving (%)                               | 2.1         | —                              |
| 2      | Finess by Air permeablity method (m <sup>2</sup> /kg,Min) | 284.5       | 225m <sup>2</sup> /kg, Min     |
| 3      | Density (gm/cc)                                           | 3.13        | —                              |
| 4      | Standard Consistency (%)                                  | 28%         | Not specified                  |
| 5      | Initial Setting time                                      | 155 minutes | Not less than 30 minutes       |
| 6      | Final Setting time                                        | 260 minutes | Not more than 600 minutes      |
| 7      | Soundness (Le Chatelier's Method)                         | 2mm         | Not more than 10 mm            |

\* The results obtained are satisfactory as per standard requirements.

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Page 1/1

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Authorized Signatory  
Quality Manager



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Format No: CP/TF/01

TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID : CP-2023-01-04-01 Date: 01-02-23  
Project Name : Package No-03 (Consists of 5 works)  
Agency : M/s Karthik Enterprises, No.123, Aishwarya, 3rd Cross, Ramanna Garden,  
Vidyaranya, Bengaluru-560097  
Customer's Reference : BBMP/EE/BTP/WO/78/2022-23  
Date of Receipt : 04-01-23  
Sample Type : JSW 53grade  
Reference to BIS codes : IS 269:2015 Ordinary Portland cement Specification ,  
IS 4031 (Part 4,5):1988 , IS 4031 Part 4, (RA 2019) Determination of Consistency of Standard  
Cement Paste, Clause 5  
IS 4031 Part 6, (RA 2019) Determination of Compressive Strength, Clause 6  
Date of test : 04-01-23  
Environmental Conditions during : Temperature: 26°C  
test Humidity: 72%

| Compressive Strength |                     |                       |                                    |
|----------------------|---------------------|-----------------------|------------------------------------|
| Sl.No.               | Physical properties | Results               | Requirement as per<br>IS 269:2015  |
| 1                    | 3 Days              | 28.5N/mm <sup>2</sup> | Not less than 27 N/mm <sup>2</sup> |
| 2                    | 7 Days              | 39.0N/mm <sup>2</sup> | Not less than 37 N/mm <sup>2</sup> |
| 3                    | 28 Days             | 58.5N/mm <sup>2</sup> | Not less than 53 N/mm <sup>2</sup> |

\* The results obtained are satisfactory as per standard requirements.

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Page 1/1  
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## TEST REPORT ON COARSE AGGREGATES

Lab ID : CP-2023-01-04-01 Date: 07-01-23  
Project Name : Package No-03 (Consists of 5 works)  
Agency : M/s Karthik Enterprises, No.123, Aishwarya, 3rd Cross, Ramanna Garden, Vidyananyapura, Bengaluru-560097  
Customer's Reference : BBMP/EE/BTP/WO/78/2022-23  
Date of Receipt : 04-01-23  
Sample Type : 40mm down size coarse aggregate  
Reference to BIS codes : IS: 383:2016 (Specification for Coarse and fine Aggregates )  
IS: 2386 :1963(Part - 1,3,4) RA2021  
IS 2386 Part 1: Particle Size and Shape  
IS 2386 Part 3: Specific gravity, Density, Voids, Water Absorption  
IS 2386 Part 4: Mechanical Properties  
Date of test : 04-01-23

### SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 40MM DOWN COARSE AGGREGATE:

Total weight taken : 15000 grams

| Sample No. | Sieve No. | Weight Retained in gms | Cumulative Weight Retained in gms | % Cumulative Weight Retained | % Passing | Required as per IS 383:2016 |
|------------|-----------|------------------------|-----------------------------------|------------------------------|-----------|-----------------------------|
| 1          | 80 mm     | 0                      | 0                                 | 0.0                          | 100       | 100                         |
| 2          | 40 mm     | 214                    | 214                               | 1.4                          | 98.6      | 90-100                      |
| 3          | 20 mm     | 7254                   | 7468                              | 49.8                         | 50.2      | 30-70                       |
| 4          | 10 mm     | 4442                   | 11910                             | 79.4                         | 20.6      | 10-35                       |
| 5          | 4.75 mm   | 2685                   | 14595                             | 97.3                         | 2.7       | 0-5                         |
| 6          | Pan       | 405                    | 15000                             | 100.0                        | 0         | ---                         |

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TEST REPORT ON COARSE AGGREGATES

Lab ID : CP-2023-01-04-01

Date: 07-01-23

PHYSICAL PROPERTIES

| Sl.no | Tests                          | Result | Requirements as per IS:383-2016                                                              |
|-------|--------------------------------|--------|----------------------------------------------------------------------------------------------|
| 1     | Flakiness Index(%)             | 10.6   | Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate |
| 2     | Elongation Index(%)            | 12.3   |                                                                                              |
| 3     | Specific Gravity               | 2.64   | —                                                                                            |
| 4     | Bulk Density(Loose) (Kg/l)     | 1.49   | —                                                                                            |
| 5     | Bulk Density(Compacted) (Kg/l) | 1.52   | —                                                                                            |
| 6     | Water Absorption(%)            | 0.17   | —                                                                                            |

\* The results obtained are satisfactory as per standard requirements.



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Page 2/2

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## TEST REPORT ON COARSE AGGREGATES

Lab ID : CP-2023-01-04-01 Date: 06-01-23  
Project Name : Package No-03 (Consists of 5 works)  
Agency : M/s Karthik Enterprises, No.123, Aishwarya, 3rd Cross, Ramanna Garden, Vidyananyapura, Bengaluru-560097  
Customer Reference : BBMP/EE/BTP/WO/78/2022-23  
Date of Receipt : 04-01-23  
Sample Type/ Size : 20mm down size coarse aggregate  
Reference to BIS codes : IS: 383:2016 (Specification for Coarse and fine Aggregates )  
IS: 2386 :1963(Part - 1,3,4) RA2021  
IS 2386 Part 1: Particle Size and Shape  
IS 2386 Part 3: Specific gravity, Density, Voids, Water Absorption  
IS 2386 Part 4: Mechanical Properties  
Date of test : 04-01-23

### SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 20MM DOWN COARSE AGGREGATE:

Total weight taken : 5000 grams

| Sample No. | Sieve No. | Weight Retained in gms | Cumulative Weight Retained in gms | % Cumulative Weight Retained | % Passing | Required as per IS 383:2016 |
|------------|-----------|------------------------|-----------------------------------|------------------------------|-----------|-----------------------------|
| 1          | 40 mm     | 0                      | 0                                 | 0                            | 100       | 100                         |
| 2          | 20 mm     | 237                    | 237                               | 4.7                          | 95.3      | 90-100                      |
| 3          | 10 mm     | 2544                   | 2781                              | 55.6                         | 44.4      | 25-55                       |
| 4          | 4.75 mm   | 2107                   | 4888                              | 97.8                         | 2.2       | 0-10                        |
| 5          | Pan       | 112                    | 5000                              | 100                          | 0         | -                           |

Page 1/2

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## TEST REPORT ON COARSE AGGREGATES

Lab ID

:

CP-2023-01-04-01

Date: 06-01-23

### PHYSICAL PROPERTIES

| Sl.no | Tests                          | Result | Requirements as per IS:383-2016                                                                                                                                                                                                               |
|-------|--------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | Flakiness Index(%)             | 10.7   | Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate                                                                                                                                                  |
| 2     | Elongation Index(%)            | 11.4   |                                                                                                                                                                                                                                               |
| 3     | Specific Gravity               | 2.65   | —                                                                                                                                                                                                                                             |
| 4     | Bulk Density(Loose) (Kg/l)     | 1.53   | —                                                                                                                                                                                                                                             |
| 5     | Bulk Density(Compacted) (Kg/l) | 1.57   | —                                                                                                                                                                                                                                             |
| 6     | Water Absorption(%)            | 0.19   | —                                                                                                                                                                                                                                             |
| 7     | Aggregate crushing Value(%)    | 25.6   | Max 30% for Aggregates to be used in concrete for wearing Surface, In case Aggregate Crushing Value Exceeds 30% then the test for ten percent fines should be conducted for Aggregates to be used in concrete other than for wearing Surface. |
| 8     | Aggregate Impact Value(%)      | 22.5   | 30% for Aggregates to be used in concrete for wearing Surface,<br>45% for Aggregates to be used in concrete other than for wearing Surface.                                                                                                   |

\* The results obtained are satisfactory as per standard requirements.



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Quality Manager

  
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Page 2/2

\*End of Report\*



## TEST REPORT OF FINE AGGREGATE

Lab ID : CP-2023-01-04-01 Date: 06-01-23

Project Name : Package No-03 (Consists of 5 works)

Agency : M/s Karthik Enterprises, No.123, Aishwarya, 3rd Cross, Ramanna Garden, Vidyaranyapura, Bengaluru-560097

Customer's Reference : BBMP/EE/BTP/WO/78/2022-23

Date of Receipt : 04-01-23

Sample Type : Fine Aggregate

Reference to BIS codes : IS 383 : 2016 (Specification for Coarse and fine Aggregates)  
IS: 2386 :1963(Part - 1, 3) RA2012  
IS 2386 Part 1: Particle Size and Shape  
IS 2386 Part 3: Specific gravity, Density, Voids, Water Absorption

Date of test : 04-01-23

Total weight taken : 1000 grams

| Sl.no | Sieve Size | Weight Retained (gms) | Cumulative Weight Retained (gms) | % Cumulative Weight Retained | % Passing | Requirement as per IS 383:2016 |                 |                  |                 |
|-------|------------|-----------------------|----------------------------------|------------------------------|-----------|--------------------------------|-----------------|------------------|-----------------|
|       |            |                       |                                  |                              |           | Grading Zone I                 | Grading Zone II | Grading Zone III | Grading Zone IV |
| 1     | 10 mm      | 0                     | 0                                | 0.0                          | 100.0     | 100                            | 100             | 100              | 100             |
| 2     | 4.75 mm    | 22                    | 22                               | 2.2                          | 97.8      | 90-100                         | 90-100          | 90-100           | 95-100          |
| 3     | 2.36 mm    | 45                    | 67                               | 6.7                          | 93.3      | 60-95                          | 75-100          | 85-100           | 95-100          |
| 4     | 1.18 mm    | 242                   | 309                              | 30.9                         | 69.1      | 30-70                          | 55-90           | 75-100           | 90-100          |
| 5     | 600 micron | 201                   | 510                              | 51.0                         | 49.0      | 15-34                          | 35-59           | 60-79            | 80-100          |
| 6     | 300 micron | 208                   | 718                              | 71.8                         | 28.2      | 5-20                           | 8-30            | 12-40            | 15-50           |
| 7     | 150 micron | 195                   | 913                              | 91.3                         | 8.7       | 0-10                           | 0-10            | 0-10             | 0-15            |
| 8     | Pan        | 87                    | 1000                             | 100.0                        | 0.0       | ---                            | ---             | ---              | ---             |

Result : The tested Sample Conforms to Grading Zone II

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# 4, 7TH MAIN MALLESWARAM, BANGALORE -3

### TEST REPORT OF FINE AGGREGATE

Lab ID : CP-2023-01-04-01

Date: 06-01-23

#### PHYSICAL PROPERTIES

| Sl.no | Tests                            | Result | Requirements as per IS 383:2016                                                                                                             |
|-------|----------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | Water Absorption(%)              | 1.7    | —                                                                                                                                           |
| 2     | Specific Gravity                 | 2.50   | —                                                                                                                                           |
| 3     | Material finer than 75 micron(%) | 8.7    | Uncrushed fine Aggregate Max 3%,<br>Crushed Fine aggregate Max 15%,<br>Mixed Fine aggregate Max 12%,<br>Manufactured Fine aggregate Max 10% |

\* The results obtained are satisfactory as per standard requirements.



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Quality Manager

Page 2/2

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## TEST RESULTS OF STEEL

Lab ID : CP-2023-01-04-01 Date: 06-01-23  
Project Name : Package No-03 (Consists of 5 works)  
Agency : M/s Karthik Enterprises, No.123, Aishwarya, 3rd Cross, Ramanna Garden,  
Vidyaranya, Bengaluru-560097  
Customer's Reference : BBMP/EE/BTP/WO/78/2022-23  
Date of Receipt : 04-01-23  
Sample Type : A-one Gold  
Reference to BIS codes : IS 1786-2008, IS:1608-2005(RA 2011), IS 1599-2019.  
Date of test: : 04-01-23

| Sl.No | Identification of sample | Grade of the sample | Diameter of the steel bar | Weight of the sample | Yield stress         | Tensile strength     | Elongation | Bend test    | Rebend test  |
|-------|--------------------------|---------------------|---------------------------|----------------------|----------------------|----------------------|------------|--------------|--------------|
|       |                          |                     | (mm)                      | (kg/m)               | (N/mm <sup>2</sup> ) | (N/mm <sup>2</sup> ) | (%)        |              |              |
| 1     | A-one Gold               | Fe550               | 8                         | 0.391                | 561                  | 657                  | 20.0%      | Satisfactory | Satisfactory |
| 2     | A-one Gold               | Fe550               | 10                        | 0.616                | 566                  | 664                  | 20.0%      | Satisfactory | Satisfactory |
| 3     | A-one Gold               | Fe550               | 12                        | 0.888                | 573                  | 670                  | 20.0%      | Satisfactory | Satisfactory |

\* The results obtained are satisfactory as per standard requirements.

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# 4, 7TH MAIN MALLESWARAM, BANGALORE -3

## Spectro Chemical Analysis, Physical, Non Destructive All Type of Metal Testing

Lab ID : CP-2023-01-04-01 Date: 06-01-23  
Project Name : Package No-03 (Consists of 5 works)  
Agency : M/s Karthik Enterprises, No.123, Aishwarya, 3rd Cross, Ramanna Garden, Vidyananyapura, Bengaluru-560097  
Customer's Reference : BBMP/EE/BTP/WO/78/2022-23  
Date of Receipt : 04-01-23  
Sample Type / Grade : A-one Gold  
Date of test : 04-01-23

### CHEMICAL ANALYSIS

| Sl. No. | Chemical Contents      | 8mm   | 10mm  | 12mm  | Max. Limits as per<br>IS:1786-2008,<br>Gr. Fe 550 |
|---------|------------------------|-------|-------|-------|---------------------------------------------------|
| 1       | Carbon (C) %           | 0.142 | 0.131 | 0.14  | 0.300 Max                                         |
| 2       | Phosphor (P) %         | 0.031 | 0.046 | 0.040 | 0.050 Max                                         |
| 3       | Sulphur (S) %          | 0.036 | 0.042 | 0.041 | 0.055 Max                                         |
| 4       | Sulphur & Phosphorus % | 0.083 | 0.056 | 0.075 | 0.100 Max                                         |

Note : The above material confirms to ASI S S 304 with respect to elements analysed

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Page 1/1

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## TEST REPORT OF PRECAST COVER SLAB

Lab ID : CP-2023-01-04-01 Date: 09-01-23  
Project Name : Package No-03 (Consists of 5 works)  
Agency : M/s Karthik Enterprises, No.123, Aishwarya, 3rd Cross, Ramanna Garden, Vidyanarayapura, Bengaluru-560097  
Customer's Reference : BBMP/EE/BTP/WO/78/2022-23  
Date of Receipt : 04-01-23  
Sample Type /Size : Precast Cover Slab - 100mm Thick  
Reference to BIS codes : IS: 516 - 1959 (RA 2018) Methods of Tests for Strength of Concrete  
Date of test : 04/01/2023  
Grade of Slab : M20

| Sl. No. | Identification Mark | Diameter of the core | Height of the core | Weight of the core | Area    | Failure Load | Core Compressive strength | Corrected Cylinder Compressive strength | Equivalent Cube Compressive strength |
|---------|---------------------|----------------------|--------------------|--------------------|---------|--------------|---------------------------|-----------------------------------------|--------------------------------------|
|         |                     | (mm)                 | (mm)               | (kg)               | (Sq.mm) | (KN)         | (N/mm <sup>2</sup> )      | (N/mm <sup>2</sup> )                    | (N/mm <sup>2</sup> )                 |
| 1       | Cover Slab-1        | 77.42                | 100.48             | 1.116              | 4707    | 99.7         | 21.2                      | 19.7                                    | 24.6                                 |
| 2       | Cover Slab-2        | 77.63                | 100.52             | 1.122              | 4732    | 105.3        | 22.3                      | 20.7                                    | 25.9                                 |
| 3       | Cover Slab-3        | 77.51                | 100.51             | 1.118              | 4718    | 101.5        | 21.5                      | 20.0                                    | 25.0                                 |

The results obtained are satisfactory as per standard requirements.

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## TEST REPORT OF PRECAST COVER SLAB

Lab ID : CP-2023-01-04-01 Date: 09-01-23  
Project Name : Package No-03 (Consists of 5 works)  
Agency : M/s Karthik Enterprises, No.123, Aishwarya, 3rd Cross, Ramanna Garden, Vidyaranyapura, Bengaluru-560097  
Customer's Reference : BBMP/EE/BTP/WO/78/2022-23  
Date of Receipt : 04-01-23  
Sample Type /Size : Precast Cover Slab - 230mm Thick  
Reference to BIS codes : IS: 516 - 1959 (RA 2018) Methods of Tests for Strength of Concrete  
Date of test : 04/01/2023  
Grade of Slab : M20

| Sl. No. | Identification Mark | Diameter of the core | Height of the core | Weight of the core | Area    | Failure Load | Core Compressive strength | Corrected Cylinder Compressive strength | Equivalent Cube Compressive strength |
|---------|---------------------|----------------------|--------------------|--------------------|---------|--------------|---------------------------|-----------------------------------------|--------------------------------------|
|         |                     | (mm)                 | (mm)               | (kg)               | (Sq.mm) | (KN)         | (N/mm <sup>2</sup> )      | (N/mm <sup>2</sup> )                    | (N/mm <sup>2</sup> )                 |
| 1       | Cover Slab-1        | 77.36                | 230.15             | 2.115              | 4699    | 100.6        | 21.4                      | 19.9                                    | 24.9                                 |
| 2       | Cover Slab-2        | 77.55                | 230.45             | 2.131              | 4722    | 105.3        | 22.3                      | 20.7                                    | 25.9                                 |
| 3       | Cover Slab-3        | 77.42                | 230.68             | 2.110              | 4707    | 99.0         | 21.0                      | 19.6                                    | 24.4                                 |

The results obtained are satisfactory as per standard requirements.

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Page 1/1

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## TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : CP-2023-01-16-01 Date: 20/01/2023  
Project Name : Package No-03 (Consists of 5 works)  
Agency : M/s Karthik Enterprises, No.123, Aishwarya, 3rd Cross, Ramanna Garden, Vidyanarayapura, Bengaluru-560097  
Customer's Reference : BBMP/EE/BTP/WO/78/2022-23  
Date of Receipt : 16-01-23  
Customer ID : Drain Bottom Raft Concrete - Vidyanarayapura, BEL Road 2nd Block, 2nd Cross LHS  
Sample Type /Size : 150X150X150 mm  
Sample grade/Age : M20 / 7 Days Compressive Strength  
Reference to BIS codes : IS: 516 - 1959 (RA 2018) Methods of Tests for Strength of Concrete Cl.5  
Date of test : 20/01/2023

| Sl. No. | Identification Mark                                                             | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen      | Cross sectional area | Weight of the sample | Failure Load | Compressive strength | Average Compressive Strength |
|---------|---------------------------------------------------------------------------------|-------------------|-----------------|-----------------|--------------------------------|----------------------|----------------------|--------------|----------------------|------------------------------|
|         |                                                                                 |                   |                 |                 | (mm)                           | (Sq.mm)              | (kg)                 | (KN)         | (N/mm <sup>2</sup> ) | (N/mm <sup>2</sup> )         |
| 1       | Drain Bottom Raft Concrete - Vidyanarayapura, BEL Road 2nd Block, 2nd Cross LHS | M20               | 13/01/2023      | 20/01/2023      | 150.33 X<br>151.35 X<br>151.89 | 22752                | 8.355                | 418.2        | 18.4                 | 18.3                         |
| 2       | Drain Bottom Raft Concrete - Vidyanarayapura, BEL Road 2nd Block, 2nd Cross LHS | M20               | 13/01/2023      | 20/01/2023      | 151.45 X<br>151.59 X<br>149.02 | 22958                | 8.770                | 413.9        | 18.0                 |                              |
| 3       | Drain Bottom Raft Concrete - Vidyanarayapura, BEL Road 2nd Block, 2nd Cross LHS | M20               | 13/01/2023      | 20/01/2023      | 151.41 X<br>150.10 X<br>149.97 | 22726                | 8.662                | 421.3        | 18.5                 |                              |

\* The results obtained are satisfactory as per standard requirements.

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Page 1/1

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## TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : CP-2023-01-16-01 Date: 10/02/2023  
Project Name : Package No-03 (Consists of 5 works)  
Agency : M/s Karthik Enterprises, No.123, Aishwarya, 3rd Cross, Ramanna Garden, Vidyananyapura, Bengaluru-560097  
Customer's Reference : BBMP/EE/BTP/WO/78/2022-23  
Date of Receipt : 16-01-23  
Customer ID : Drain Bottom Raft Concrete - Vidyananyapura, BEL Road 2nd Block, 2nd Cross LHS  
Sample Type /Size : 150X150X150 mm  
Sample grade/Age : M20 / 28 Days Compressive Strength  
Reference to BIS codes : IS: 516 - 1959 (RA 2018) Methods of Tests for Strength of Concrete Cl.5  
Date of test : 10/02/2023

| Sl. No. | Identification Mark                                                            | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen      | Cross sectional area | Weight of the sample | Failure Load | Compressive strength | Average Compressive Strength |
|---------|--------------------------------------------------------------------------------|-------------------|-----------------|-----------------|--------------------------------|----------------------|----------------------|--------------|----------------------|------------------------------|
|         |                                                                                |                   |                 |                 | (mm)                           | (Sq.mm)              | (kg)                 | (KN)         | (N/mm <sup>2</sup> ) | (N/mm <sup>2</sup> )         |
| 1       | Drain Bottom Raft Concrete - Vidyananyapura, BEL Road 2nd Block, 2nd Cross LHS | M20               | 13/01/2023      | 10/02/2023      | 149.59 X<br>150.11 X<br>150.40 | 22455                | 8.586                | 516.5        | 23.0                 | 23.1                         |
| 2       | Drain Bottom Raft Concrete - Vidyananyapura, BEL Road 2nd Block, 2nd Cross LHS | M20               | 13/01/2023      | 10/02/2023      | 149.58 X<br>149.49 X<br>151.51 | 22361                | 8.991                | 513.5        | 23.0                 |                              |
| 3       | Drain Bottom Raft Concrete - Vidyananyapura, BEL Road 2nd Block, 2nd Cross LHS | M20               | 13/01/2023      | 10/02/2023      | 150.75 X<br>151.71 X<br>151.40 | 22870                | 8.278                | 534.7        | 23.4                 |                              |

\* The results obtained are satisfactory as per standard requirements.

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Page 1/1

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## TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : CP-2023-01-18-01 Date: 24/01/2023  
Project Name : Package No-03 (Consists of 5 works)  
Agency : M/s Karthik Enterprises, No.123, Aishwarya, 3rd Cross, Ramanna Garden, Vidyananyapura, Bengaluru-560097  
Customer's Reference : BBMP/EE/BTP/WO/78/2022-23  
Date of Receipt : 18-01-23  
Customer ID : Drain Side Wall Concrete - Vidyananyapura, BEL Road 2nd Block, 2nd Cross LHS  
Sample Type /Size : 150X150X150 mm  
Sample grade/Age : M20 / 7 Days Compressive Strength  
Reference to BIS codes : IS: 516 - 1959 (RA 2018) Methods of Tests for Strength of Concrete Cl.5  
Date of test : 24/01/2023

| Sl. No. | Identification Mark                                                          | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen | Cross sectional area | Weight of the sample | Failure Load | Compressive strength | Average Compressive Strength |
|---------|------------------------------------------------------------------------------|-------------------|-----------------|-----------------|---------------------------|----------------------|----------------------|--------------|----------------------|------------------------------|
|         |                                                                              |                   |                 |                 | (mm)                      | (Sq.mm)              | (kg)                 | (KN)         | (N/mm <sup>2</sup> ) | (N/mm <sup>2</sup> )         |
| 1       | Drain Side Wall Concrete - Vidyaranyapura. BEL Road 2nd Block, 2nd Cross LHS | M20               | 17/01/2023      | 24/01/2023      | 150.06 X                  | 22631                | 8.842                | 422.3        | 18.7                 | 18.6                         |
|         |                                                                              |                   |                 |                 | 150.81 X                  |                      |                      |              |                      |                              |
|         |                                                                              |                   |                 |                 | 150.46                    |                      |                      |              |                      |                              |
| 2       | Drain Side Wall Concrete - Vidyaranyapura. BEL Road 2nd Block, 2nd Cross LHS | M20               | 17/01/2023      | 24/01/2023      | 149.44 X                  | 22393                | 8.618                | 412.1        | 18.4                 |                              |
|         |                                                                              |                   |                 |                 | 149.85 X                  |                      |                      |              |                      |                              |
|         |                                                                              |                   |                 |                 | 149.25                    |                      |                      |              |                      |                              |
| 3       | Drain Side Wall Concrete - Vidyaranyapura, BEL Road 2nd Block, 2nd Cross LHS | M20               | 17/01/2023      | 24/01/2023      | 149.01 X                  | 22567                | 8.692                | 422.6        | 18.7                 |                              |
|         |                                                                              |                   |                 |                 | 151.44 X                  |                      |                      |              |                      |                              |
|         |                                                                              |                   |                 |                 | 150.36                    |                      |                      |              |                      |                              |

\* The results obtained are satisfactory as per standard requirements.

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Page 1/1

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## TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : CP-2023-01-18-01 Date: 14/02/2023  
Project Name : Package No-03 (Consists of 5 works)  
Agency : M/s Karthik Enterprises. No.123, Aishwarya, 3rd Cross, Ramanna Garden, Vidyananyapura, Bengaluru-560097  
Customer's Reference : BBMP/EE/BTP/WO/78/2022-23  
Date of Receipt : 18-01-23  
Customer ID : Drain Side Wall Concrete - Vidyananyapura, BEL Road 2nd Block, 2nd Cross LHS  
Sample Type /Size : 150X150X150 mm  
Sample grade/Age : M20 / 28 Days Compressive Strength  
Reference to BIS codes : IS: 516 - 1959 (RA 2018) Methods of Tests for Strength of Concrete Cl.5  
Date of test : 14/02/2023

| Sl. No. | Identification Mark                                                          | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen      | Cross sectional area | Weight of the sample | Failure Load | Compressive strength | Average Compressive Strength |
|---------|------------------------------------------------------------------------------|-------------------|-----------------|-----------------|--------------------------------|----------------------|----------------------|--------------|----------------------|------------------------------|
|         |                                                                              |                   |                 |                 | (mm)                           | (Sq.mm)              | (kg)                 | (KN)         | (N/mm <sup>2</sup> ) | (N/mm <sup>2</sup> )         |
| 1       | Drain Side Wall Concrete - Vidyananyapura, BEL Road 2nd Block, 2nd Cross LHS | M20               | 17/01/2023      | 14/02/2023      | 149.91 X<br>150.79 X<br>151.86 | 22605                | 8.295                | 535.9        | 23.7                 | 23.3                         |
| 2       | Drain Side Wall Concrete - Vidyananyapura, BEL Road 2nd Block, 2nd Cross LHS | M20               | 17/01/2023      | 14/02/2023      | 151.59 X<br>149.59 X<br>149.53 | 22677                | 8.146                | 512.3        | 22.6                 |                              |
| 3       | Drain Side Wall Concrete - Vidyananyapura, BEL Road 2nd Block, 2nd Cross LHS | M20               | 17/01/2023      | 14/02/2023      | 151.80 X<br>149.98 X<br>149.01 | 22767                | 8.864                | 537.2        | 23.6                 |                              |

\* The results obtained are satisfactory as per standard requirements.

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Page 1/1

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## TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : CP-2023-01-20-01 Date: 26/01/2023  
Project Name : Package No-03 (Consists of 5 works)  
Agency : M/s Karthik Enterprises, No.123, Aishwarya, 3rd Cross, Ramanna Garden, Vidyananyapura, Bengaluru-560097  
Customer's Reference : BBMP/EE/BTP/WO/78/2022-23  
Date of Receipt : 20-01-23  
Customer ID : Culvert Bottom Raft Concrete -Vidyananyapura, BEL 2nd Block  
Sample Type /Size : 150X150X150 mm  
Sample grade/Age : M20 / 7 Days Compressive Strength  
Reference to BIS codes : IS: 516 - 1959 (RA 2018) Methods of Tests for Strength of Concrete C1.5  
Date of test : 26/01/2023

| Sl. No. | Identification Mark                                          | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen | Cross sectional area | Weight of the sample | Failure Load | Compressive strength | Average Compressive Strength |
|---------|--------------------------------------------------------------|-------------------|-----------------|-----------------|---------------------------|----------------------|----------------------|--------------|----------------------|------------------------------|
|         |                                                              |                   |                 |                 | (mm)                      | (Sq.mm)              | (kg)                 | (KN)         | (N/mm <sup>2</sup> ) | (N/mm <sup>2</sup> )         |
| 1       | Culvert Bottom Raft Concrete - Vidyananyapura, BEL 2nd Block | M20               | 19/01/2023      | 26/01/2023      | 150.61 X                  | 22695                | 8.409                | 420.2        | 18.5                 | 18.6                         |
|         |                                                              |                   |                 |                 | 150.69 X                  |                      |                      |              |                      |                              |
|         |                                                              |                   |                 |                 | 151.75                    |                      |                      |              |                      |                              |
| 2       | Culvert Bottom Raft Concrete - Vidyananyapura, BEL 2nd Block | M20               | 19/01/2023      | 26/01/2023      | 151.29 X                  | 22546                | 8.458                | 418.3        | 18.6                 |                              |
|         |                                                              |                   |                 |                 | 149.03 X                  |                      |                      |              |                      |                              |
|         |                                                              |                   |                 |                 | 151.30                    |                      |                      |              |                      |                              |
| 3       | Culvert Bottom Raft Concrete - Vidyananyapura, BEL 2nd Block | M20               | 19/01/2023      | 26/01/2023      | 149.60 X                  | 22661                | 8.556                | 422.7        | 18.7                 |                              |
|         |                                                              |                   |                 |                 | 151.48 X                  |                      |                      |              |                      |                              |
|         |                                                              |                   |                 |                 | 150.34                    |                      |                      |              |                      |                              |

\* The results obtained are satisfactory as per standard requirements.

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Page 1/1

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## TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : CP-2023-01-20-01 Date: 16/02/2023  
Project Name : Package No-03 (Consists of 5 works)  
Agency : M/s Karthik Enterprises, No.123, Aishwarya, 3rd Cross, Ramanna Garden, Vidyanayapura, Bengaluru-560097  
Customer's Reference : BBMP/EE/BTP/WO/78/2022-23  
Date of Receipt : 20-01-23  
Customer ID : Culvert Bottom Raft Concrete -Vidyanayapura, BEL 2nd Block  
Sample Type /Size : 150X150X150 mm  
Sample grade/Age : M20 / 28 Days Compressive Strength  
Reference to BIS codes : IS: 516 - 1959 (RA 2018) Methods of Tests for Strength of Concrete Cl.5  
Date of test : 16/02/2023

| Sl. No. | Identification Mark                                         | Grade of concrete | Date of Casting | Date of Testing | Dimension of the Specimen      | Cross sectional area | Weight of the sample | Failure Load | Compressive strength | Average Compressive Strength |
|---------|-------------------------------------------------------------|-------------------|-----------------|-----------------|--------------------------------|----------------------|----------------------|--------------|----------------------|------------------------------|
|         |                                                             |                   |                 |                 | (mm)                           | (Sq.mm)              | (kg)                 | (KN)         | (N/mm <sup>2</sup> ) | (N/mm <sup>2</sup> )         |
| 1       | Culvert Bottom Raft Concrete - Vidyanayapura, BEL 2nd Block | M20               | 19/01/2023      | 16/02/2023      | 150.97 X<br>151.35 X<br>149.25 | 22849                | 8.471                | 543.5        | 23.8                 | 23.4                         |
| 2       | Culvert Bottom Raft Concrete - Vidyanayapura, BEL 2nd Block | M20               | 19/01/2023      | 16/02/2023      | 149.62 X<br>151.37 X<br>149.65 | 22648                | 8.435                | 516.8        | 22.8                 |                              |
| 3       | Culvert Bottom Raft Concrete - Vidyanayapura, BEL 2nd Block | M20               | 19/01/2023      | 16/02/2023      | 150.37 X<br>149.75 X<br>151.11 | 22518                | 8.597                | 534.0        | 23.7                 |                              |

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Page 1/1  
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